

Learning To Live With Japanese Brome

There's little chance that land managers will rid grasslands in the Northern Plains of the weedy annual grass called Japanese brome, also known as *Bromus japonicus*. So ARS researchers in Miles City, Montana, are helping ranchers live with it.

The scientists are correlating rainfall and other environmental factors with the amount of the weed available for grazing, to help ranchers make the best use of both the weed and the native grasses.

Japanese brome can make up as much as 40 percent of the forage available on the mixed-grass prairies of Montana, Wyoming, and the Dakotas.

"When the plants are young, they make nutritious, palatable forage for cattle," says ARS range scientist Marshall R. Haferkamp. "They also don't develop seedheads as prickly as cheatgrass, a relative of Japanese brome that's pervasive in other western states."

The problem is that the amount of forage annual grasses produce varies greatly, ranging from as low as 20 pounds per acre to more than 600 in the spring. Annual bromes contribute over 60 percent of this production. That makes using brome as food for a cattle herd unpredictable.

"Ideally, livestock would graze brome-infested pastures during early spring and then move to other pastures," says Haferkamp. "But we don't always know how much brome forage will be produced each spring. Grazing these pastures when brome forage is scarce may hinder development of the associated perennial grasses."

The goal is to help ranchers better balance the use of various rangeland resources. To do that, the scientists need to understand what controls the growth rate of Japanese brome. They're measuring soil moisture, soil nitrogen, and precipitation to find out how well each factor predicts brome productivity. They're also looking at how the weed affects production of preferred perennial grasses. They plan to produce a decision-support system to help farmers plan grazing strategies based on each year's variable environmental conditions.—By **Kathryn Barry Stelljes**, ARS.

Marshall R. Haferkamp is with the USDA-ARS Fort Keogh Livestock and Range Research Laboratory, Route 1, Box 2021, Miles City, MT 59301-9202; phone (406) 232-8211, fax (406) 232-8209, e-mail marshall@larl.ars.usda.gov. ♦

Lactic Acid Reduces Microbes in Poultry

Lactic acid, commonly used in foods as a flavoring or preservative, reduces *Salmonella* in two major organs in broiler chickens, according to ARS studies in College Station, Texas.

One organ, called the crop, is part of the chicken's esophagus, which leads from the mouth to the stomach. The other organ, the ceca, is a pouch connected to the large intestine.

"Both the crop and ceca are especially prone to bacterial contamination," says microbiologist J. Allen Byrd, of the ARS Food and Feed Safety Research Unit.

Eight to 10 hours before slaughter, broiler chickens are usually taken off feed to reduce intestinal contents. During this time, they look for food and peck at whatever is on the ground. What the birds eat enters the crop and is slowly released into the stomach. If *Salmonella* is present, the highest concentration is found in the ceca. But the amount of bacteria in the crop is also significant because it ruptures 86 times more often than the ceca during processing.

By adding 2 tablespoons of lactic acid to 1.2 gallons of the chickens' drinking water, scientists reduced *Salmonella* by 41.5 percent in the crop and by 11.2 percent in the ceca, compared to birds drinking plain water.

Why would this simple tactic thwart one of the worst foodborne pathogens in poultry? Lactic acid acidifies crop contents, making them less conducive to bacterial growth. This method is an inexpensive way to help keep foodborne pathogens at bay—the cost is about 0.2 cents per bird using food-grade lactic acid. Researchers are studying other tactics to identify potential hot spots in the processing chain that may lead to bacterial contamination.

Salmonella can cause diarrhea, vomiting, and sometimes death. The bacteria, which can be killed by thoroughly cooking food, sicken an estimated 3.8 million Americans each year.—By **Linda McGraw**, ARS.

J. Allen Byrd is in the USDA-ARS Food and Feed Safety Research Unit, 2881 F&B Road, College Station, TX 77845; phone (979) 260-9331, fax (979) 260-9332, e-mail byrd@ffsru.tamu.edu. ♦